

### Swedish Ironfields.

TWO important monographs recently published by the Geological Survey of Sweden\* describe the geology of two interesting Swedish ironfields. Both contain excellent English summaries.

Dr. Per Geijer in "Gällivare Malmfält" gives an excellent account of the field and its rocks and ore deposits, accompanied by a detailed map, three plates of mine plans and bore-hole sections, and 71 figures in the text. This field consists mainly of sheets of leptite and gneiss with large masses of intrusive granite, dykes from which are associated with the ores. The leptite is shown by Dr. Geijer to be highly metamorphosed lavas or shallow intrusions; the silica percentage in the leptites varies, as shown by the series of analyses, from 70 to 47 per cent. The ores are non-titaniferous magnetite, with some hæmatite. The ore is often well banded and inter-laminated with apatite and granite.

Dr. Geijer again advocates the view that the ores are eruptive, and interprets the field as similar to that of Kiruna, but more highly metamorphosed. The differences between the two fields are obvious and striking, and several features are difficult to reconcile with the eruptive origin of the ores. Several of the photographs of the mines, for example, Fig. 39, p. 56, Fig. 52, p. 69, and Fig. 59, p. 87, show ore resting on a footwall fault. The 'ore breccia' consists of blocks of the country rock isolated by confluent veins of ore; and as the blocks appear in their original position, as in those exposed in the open-cut of the Hermelins mine in 1907, the ore was apparently introduced in solution and not as a molten intrusion. The low percentage of titanium and the regular banding of the ore, which occurs in places in thick bands parallel to the stratification and elsewhere interleaved with such thin layers of granite that Dr. Geijer compares them to *lit-à-lit* injection, also agree with the metasomatic formation of the ore.

That origin is established by Nils H. Magnusson for the very complex ores of the Långban mining field, which is west of Stockholm and north-east of Lake Wener. The ores, like those at Gällivare, are Pre-Cambrian. The field consists of a series of leptites, dolomites, and limestones, followed by an upper series of slates, graywackes, hallefintas, and spilites. The leptites are altered lavas and tuffs, which have been metamorphosed by the older series of granites: a later series of granites was followed by the intrusion of sheets of diabase.

The field is famous for its very complex mineral composition and the occurrence of many rare and some endemic species. The author gives a list of 110 mineral species, to summarise their paragenesis. The minerals include a great variety of manganese silicates, with lead silicates, species containing arsenic, antimony, beryllium, boron, fluorine, etc., and native metals; sulphides are of minor importance. A new manganese amphibole, tibergite, is founded. The ores are associated with skarn, which passes through a transitional layer, the skol, into the leptite. The author shows that the primary ores are metasomatic: after their formation the country was subject to thermometamorphism by the intrusions of older granites; the skol was formed metasomatically, and at the same time as the fissure veins and subsequent filling of the vugs.

\* Sveriges Geologiska Undersökning. Ser. Ca, No. 22: Gällivare malmfält geologisk beskrivning. Av Per Geijer. With a Summary: Geology of the Gällivare Iron Ore Field. Pp. 115+4 tavlor. 10.00 kr. Ser. Ca, No. 23: Långbans malträkt geologisk beskrivning. Av Nils H. Magnusson. Summary: The Iron and Manganese Ores of the Långban District. Pp. 111+5 tavlor. 8.00 kr. (Stockholm: Sveriges Geologiska Undersökning, 1930.)

### Weather Foreshadowing.

THERE is an increasing number of people nowadays who have not specialised in physics, yet possess enough knowledge of the subject to be able to understand the broad principles underlying the forecasting or — to use a more suitable word that is coming into use — the 'foreshadowing' of future weather by means of synoptic weather charts. Those who are prepared to take the trouble to do this will probably find that the value to them of the official forecasts is greatly increased.

The official forecaster's many difficulties include one which arises from the large variety and extent of country to which his necessarily brief statements must refer. The intelligent recipient of these forecasts, with some knowledge of local peculiarities of weather, can often make the adjustment to the general statement that may be necessary in order to make it apply to his own neighbourhood. If he possesses, in addition, a barograph, showing the variations of barometric pressure as a continuous curve, something can also be done to correct the forecast so as to meet unforeseen movements of anticyclones or depressions. If a depression fails to advance in the expected manner, or begins to fill up, a fall of the barometer may be checked, or even be replaced by a rise. The barograph is extremely effective in showing such changes of barometric tendency.

To meet the needs of this class of person, the Meteorological Office of the Air Ministry has issued a number of pamphlets in recent years. Two that should assist in the same direction have been added this year. They are entitled "The Fishery Barograph" (2d.) and "Examples of Weather Maps showing Typical Distributions of Pressure" (3d.) (London: H.M. Stationery Office). The "Fishery Barograph", though primarily designed to help seamen to anticipate gales, contains much information that is of general interest, for it includes notes about the behaviour of the wind and the barometer on the approach of stormy weather, and certain important but not generally known facts about the nation's wireless weather forecasts. The "Examples of Weather Maps" are taken from the larger official work entitled "The Weather Map". There is little that appears to call for criticism in either pamphlet; both fulfil their task of explaining in simple language various mysteries of meteorological method and terminology.

### University and Educational Intelligence.

FROM the University of Colorado we have received a bulletin containing abstracts (of 500-1500 words each) of 108 theses for higher degrees conferred in 1930. A noteworthy feature of these abstracts is the evidence they afford of the predilection of advanced students of this university for regional studies, a circumstance attributable in part, perhaps, to the publication in 1927 of a series of university studies of local geology, botany, zoology, and social history. Of the 1930 theses, more than one-fifth were regional surveys: for example, "Colorado in the Civil War", "History of a County", "Vegetation of a Mountain in Arkansas National Park", "Microzoology of Boulder Creek", and so on.

DR. K. T. COMPTON, president of the Massachusetts Institute of Technology, has announced that the Rockefeller Foundation has appropriated the sum of 170,000 dollars for research work in physics, chemistry, geology, and biology, to be spread over a period of